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physikalischen Chemie, in den verflossenen fünfzig Jahren.

In Ihrer scharfsinnigen Untersuchung des Selen und des Phosphors wiesen Sie den Zusammenhang der Allotropie mit der von dem Körper aufgenommenen Wärmemenge nach. Sie stellten die physikalischen Eigenschaften der Substanz in den verschiedenen Zuständen, insbesondere bezüglich der Dampfspannung fest und fanden merkwürdige Beziehungen der Allotropie zu dem elektrischen Leitvermögen.

Die Hauptarbeit Ihrer früheren Forschung aber war auf die Elektrolyse der Lösungen gerichtet. Es ist schwer zu sagen, ob die Bewunderung, zu welcher diese Arbeiten zwingen, mehr der Exactheit und Ausdauer bei der Bestimmung der Ionenwanderung entspringt, einer der mühsamsten, jemals angestellten experimentellen Forschungen, deren Resultate durch spätere Arbeiten nur bestätigt und kaum erweitert worden sind, oder aber der Folgerichtigkeit und Stetigkeit Ihrer Anschauungen über die elektrolytischen Vorgänge. Durch Sie allein sind wir an die richtigen Vorstellungen gewöhnt worden, welchen Sie gegen den Widerspruch selbst hervorragender Physiker Geltung verschaffen mussten, und von denen Sie später die Freude erlebt haben, dass sie das Fundament für einen grossen Theil der neueren physikalischen Chemie geworden sind.

Von ähnlicher grundlegender Bedeutung war die andere grosse Arbeit Ihres Lebens, die Erforschung der Vorgänge bei der elektrischen Entladung in Gasen. Schon in der ersten Entwicklungszeit der Spectralanalyse hatten Sie sich mit PLÜCKER an der verdienstvollen Classification der Spectra betheiligt. Ihre späteren grossen Arbeiten umfassten die Gasentladung in der Hauptsache nach allen Seiten ihrer Gesetze.

Sie waren der Erste, welcher einen der merkwürdigsten Vorgänge in der Natur dessen Fruchtbarkeit für die Wissenschaft und in der letzten Zeit auch für das Leben noch nicht bis zum Ende abgesehen werden kann, die Kathoden-Entladung im luftverdünnten Raume, in seiner vollen Entwicklung zur Anschauung brachte. Sie zuerst stellten das Vacuum in der hierzu nothwendigen und später nicht übertroffenen Vollkommenheit her und beobachteten und beschrieben die Ausbreitung und die vielseitigen Wirkungen der Kathodenstrahlen in musterhafter Weise. Zugleich gelang es Ihnen, diese Vorgänge der elektrischen Messung zugänglich zu machen und nach der Seite der Stromvertheilung wie des Leitungswiderstandes zu verfolgen. Dabei ergab sich, dass die Elektrizitätsleitung der Gase ganz anderen Gesetzen folgt, als diejenige in Metallen oder Elektrolyten. Grosse Dienste leisteten bei dieser Forschung Ihre, für die damalige Zeit im grössten Stile aus-

geführten Stromerzeuger, mittels deren Sie die intermittirende Entladung durch eine solche ersetzten, deren continuirliche Beschaffenheit, entgegen der verbreiteten Meinung, durch sinnreiche Hilfsmittel von Ihnen nachgewiesen wurde. Auch an den neueren Aufschlüssen über die Natur des Leuchtens im allgemeinen haben Sie bei diesen Gelegenheiten einen verdienstvollen Antheil genommen.

Ihre Arbeit, hochgeehrter Herr College, bildet ein classisches Beispiel für die Erfolge, welche durch die Concentration der Forschung erreichbar sind. Die Wissenschaft wird Ihnen für alle Zeiten zu tiefem Dank verpflichtet sein.

DIE KÖNIGLICH PREUSSISCHE

AKADEMIE DER WISSENSCHAFTEN.

The committee having the matter in charge purpose additionally to celebrate the fiftieth anniversary of Hittorf's doctorate by presenting him with a bust or a similar testimonial of their appreciation.

CARL BARUS.

#### SHORTER ARTICLES.

##### FUSARIUM EQUINUM (NOV. SPEC.).

AN epidemic skin disease among horses has appeared on the Umatilla Indian Reservation, Pendleton, Oregon. There are upwards of six thousand horses on the reservation, and of these more than sixty per cent. are said to be affected. The disease manifests itself through severe itching and loss of hair over almost the entire body. The animals remain around the rubbing posts all day, and a number of them die from starvation.

An examination of samples of the skin forwarded to the Pathological Division of the Bureau of Animal Industry demonstrated the presence of *Sarcoptes equi*. These parasites, however, were not present in sufficient numbers to account for the almost complete alopecia, and a careful examination of some samples, almost denuded of hair, failed to show their presence.

Microscopic examination of sections of the skin, stained with borax blue, or after Gram, showed the presence of large half-moon, spindle- or sickle-shaped bodies, deeply stained, in the hair sacs and sebaceous glands.

By pulling out one or more of the remaining hairs, clipping off the root with sterile scissors,

and shaking these roots up in melted agar and plating there develops, at 37° C., in the course of a few days, from one to five circular colonies of a fungus which grows rapidly and assumes a salmon-pink color. Cover-glass preparations made from these colonies contain numerous sickle-shaped segmented spores, characteristic of *Fusarium*.

There are, according to Dr. Erwin F. Smith, about twenty-five known varieties of this fungus. Some are strict saprophytes, others are parasitic on grains and plants, and others are pathogenic to plants. No *Fusarium* has, however, been known to be pathogenic to animals. I would, therefore, pending the present investigation, which will require some time, propose the name *Fusarium equinum* nov. spec.

VICTOR A. NÖVGAARD.

WASHINGTON, D. C.,  
Nov. 14, 1901.

#### RHIZOCTONIA AND THE POTATO.

ATTENTION has been called recently to the parasitic nature of *Rhizoctonia* on various plants in the United States by Dr. B. M. Duggar and Professor F. C. Stewart. Observations at the Colorado Experiment Station on the relation of this fungus to the potato have brought out some interesting facts. During the spring months sclerotia develop freely on tubers and young sprouts in sacks and bins. A few affected tubers in a sack or bin of clean tubers, under favorable conditions, will spread the disease and in a short time render the entire lot worthless for seed. Affected tubers used for seed transmit the disease to the young plants, and these in turn to the following crop of tubers. Under proper conditions the fungus attacks all parts of the potato plant and in all stages of growth, but it is most destructive to the softer tissues. The weaker plants are often killed before they reach the surface of the ground. Those which are able to withstand its earlier attacks are apt to suffer more or less injury from it later in the season.

*Little potatoes* are produced by the fungus injuring the tuber stems in such a manner as to prevent free transportation of plant food between the main stem and tubers, or by completely cutting off the tuber stem while the

tubers are small. When the tuber stem receives an injury sufficient to check the free transportation of plant food, the food accumulates above the injury and soon excites the buds on the tuber stem above this point into growth. These buds develop into tubers. The fungus may continue its work and in time kill back the tuber stem, or it may cut off this stem above the newly formed tubers. If the tuber stem is attacked just as it grows out of the main stem adventitious buds may push out on the main stem around the injured point. These usually develop into short-stemmed or stemless tubers, forming bunches of small tubers. If the roots are badly injured the food supply is reduced and the plant puts out weak tuber stems. These stems are easily cut off by the fungus and the plant usually sets few or no tubers. The food which it is able to take up is used mostly in top development. The leaves become thicker, have a tendency to crinkle and take on a yellowish tinge. When the roots are less severely injured but the free transportation of food to the subterranean stems is interfered with, excessive top development is produced, and the axillary buds may develop aerial potatoes.

Aerial potatoes may be produced artificially: (1) By ringing the stem; (2) by tying a line firmly around the growing stem; and (3) by removing the subterranean tubers as soon as formed.

Sclerotia are often found on the surface of the larger tubers. Apparently these sclerotia do no injury, but experiments show conclusively that scabbing and browning of tubers may be produced by this fungus.

The corrosive sublimate treatment is promising as a preventive of this disease.

F. M. ROLFS.

FORT COLLINS, COLO., Nov. 11, '01.

#### THE WORK OF THE 'ALBATROSS.'

STUDENTS of marine zoology will welcome the appearance of the brochure just issued by the U. S. Fish Commission, compiled by C. H. Townsend, and entitled, 'Dredging and Other Records of the Steamer *Albatross*, with Bibliography Relative to the Work of the Vessel.' This useful paper contains in condensed form